

D 3.3 Summary of the deliverable: “Experiment for controlling cavitation nucleation”

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This report concerns an experiment for controlling acoustic cavitation nucleation, as well as an investigation of the influence of liquid parameters on the pinch-off mechanism and pinned bubble oscillations. The motivation behind the project is supported by a short overview of the current state of the field of investigating and controlling cavitation from micropits. We explain the chosen experimental approach (based on the use of a novel technique: Digital Holographic Microscopy), data processing techniques (oscillation modes projection), and present details regarding the progress made.

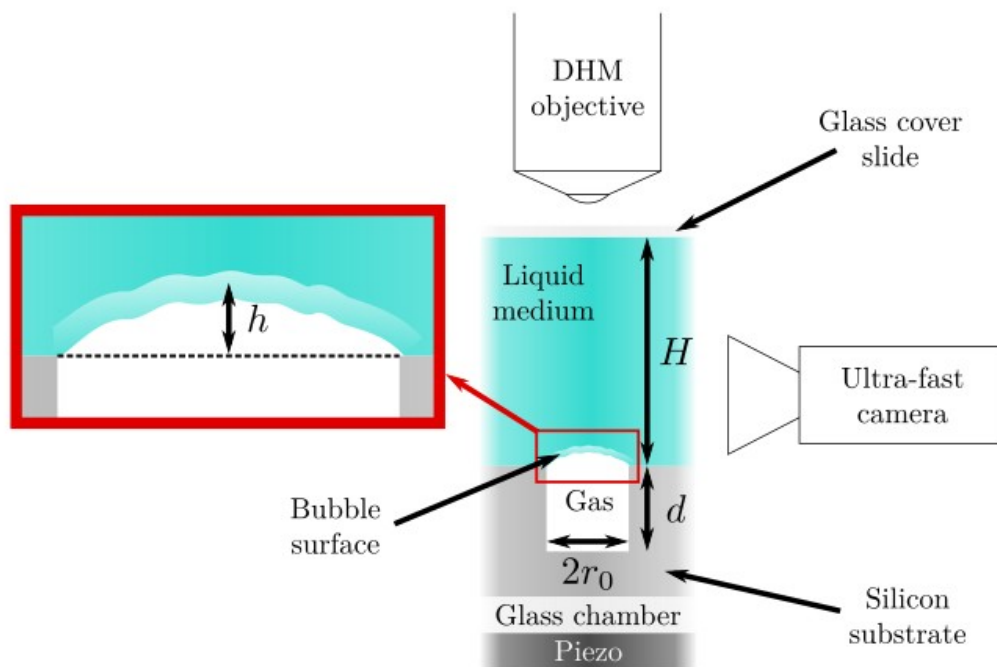


Figure 1: A schematic of the experimental setup.

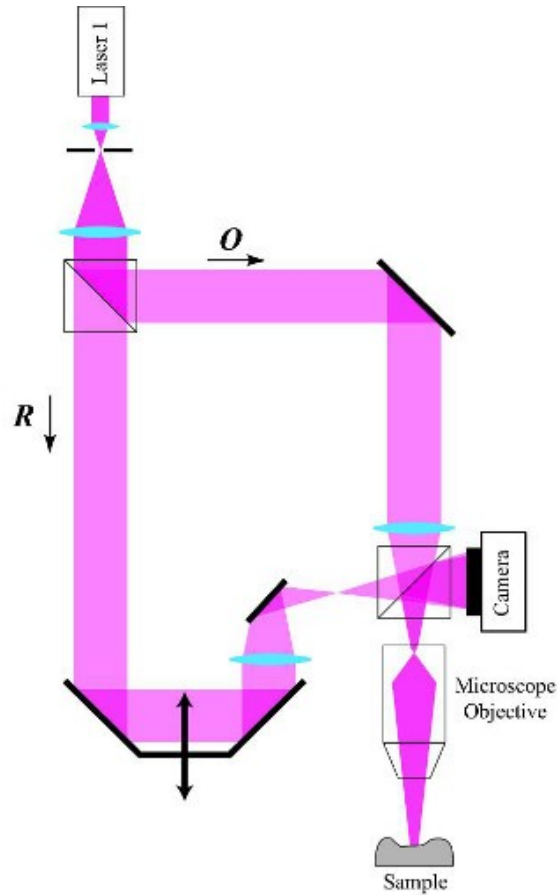


Figure 2: Digital Holographic Microscope (reflection) - basics of operation. Here O is the object beam and R is the reference beam. Source: <https://www.lyncetec.com/reflection-dhm/>

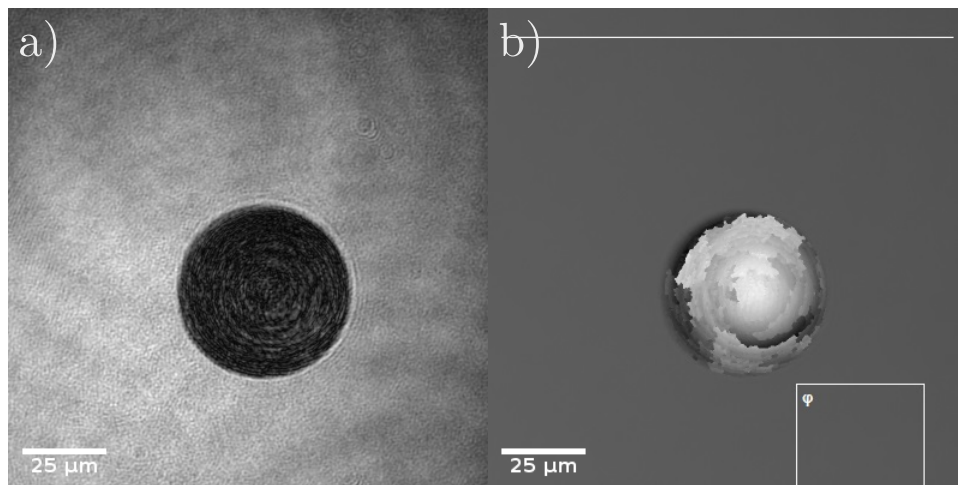


Figure 3: Bubble in a pit in silicon imaged using Lyncée Tec DHM-R1000 with a 40× objective a) intensity image b) unwrapped phase image (tilt adjustment line and reference area partially visible). Here the pit diameter is 50 μm and the depth is ~ 120 μm.